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SELECTION OF MARINE CORPS DRILL INSTRUCTORS

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The purpose of this effort was to assist the Marine Corps in more accurately predicting the success of prospective drill instructors. Students entering Drill Instructor (DI) school (N = 759) were administered an experimental test battery that covered both intellectual and motivational factors. Analyses of responses showed that a composite score of volunteer status, General Classification Test score, and level of education, and a Biographical Questionnaire score were predictive of performance in

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DI school. Performance in DI school was the best single predictor of performance on the job.

FOREWORD

This research and development effort was conducted within Exploratory Development Work Unit ZF55-521-001-101-03.11 (Marine Corps Drill Instructor Selection), in response to a request from the Manpower Management Information Systems Branch (MPI-21), Headquarters, Marine Corps (HQMC) to develop improved selection procedures for prospective drill instructors. As a result of briefings presented at HQMC, the recommended selection procedures are now being implemented.

Appreciation is expressed to MAJs Lawrence Springer, David Pound, William Wydo, and Michael St. Claire, and CAPTs Walter Kastner and Herbert Werner, present and former Directors of the Drill Instructor Schools, MCRD, San Diego and Parris Island, for their time and assistance during the data collection effort at both schools. The assistance and coordination activities of MAJ William Blaha, formerly of the Manpower Management Research Section, HQMC, are also gratefully acknowledged.

Richard C. Sorenson

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SUMMARY

Problem

Many Marines, even those with excellent military records, are unable to fulfill the training and/or job requirements of drill instructor (DI) duty. The attrition rates at DI Schools ranged from 24 to 56 percent during the period from July 1972 to December 1975. Further, 109 DIs (of approximately 1200) were relieved for cause or the good of the service between July 1974 and February 1975.

Purpose

The purpose of the present effort was to extend earlier work in the development and validation of selection procedures that would assist in more accurately predicting the success of prospective DIs.

Approach

Beginning in February 1977, an experimental battery of selection instruments was administered to students during their first week at DI Schools, San Diego and Parris Island. The experimental battery--consisting of the Strong-Campbell Interest Inventory, the Leadership Opinion Questionnaire, and a Biographical Questionnaire--was completed by 759 students. The criteria of success were both school and job performance. Special predictor keys for both criteria were developed through item analyses of the responses of students to each selection instrument in a validation subsample. The predictor keys were then applied in a cross-validation subsample. Product-moment correlations between predictor key scores and school and job performance scores were computed for the cross-validation subsample. Correlations were also computed to determine the relationship between selected background data and the performance criteria. Multiple correlational analyses were then performed to determine the validity of these predictor variables when used in combination. Finally, success expectancies were computed for selected predictor variables.

Results

School Performance

Of 759 DI students, 611 (80.5%) graduated, and 148 (19.5%) were dropped--118 (15.5%) for performance reasons, and 30 (4.0%) for other reasons. This attrition rate is lower than it was in prior years.

Of all information in the experimental battery, an empirically developed Biographical Questionnaire score provided the most accurate prediction of school performance ($r = .377$). A composite score (COMP-1) of volunteer status, GCT score, and level of education also was predictive of school performance ($R = .392$). A composite (COMP-2) of the Biographical and COMP-1 scores yielded a statistically significant increase in predictive effectiveness ($R = .429$).

Job Performance

Job performance information was received for 475 (77.7%) of the 611 DI School graduates. Of this number, 44 (9.3%) were not performing as DIs--17 (3.6%) for performance reasons, and 27 (5.7%) for other reasons. This attrition rate is lower than it was in prior years.

The Biographical Questionnaire score showed a statistically significant but low relationship with DI on-the-job performance (r = .156). The attempt to increase predictive effectiveness by including this and other potential predictor scores in a multiple regression analysis was unsuccessful. School performance, on the other hand, was related to job performance at a reasonably high and statistically significant level of confidence (r = .325).

Conclusions

1. The Biographical Questionnaire score is an effective predictor of DI School performance.

2. A composite score of volunteer status, GCT score, and level of education (COMP-1) is also an effective predictor of DI School performance.

3. A composite of these two predictors, COMP-1 and Biographical Questionnaire score (COMP-2), yields even greater accuracy in predicting DI School performance.

4. DI School performance is the best single predictor of performance on the job.

Recommendations

1. It is recommended that COMP-1 and COMP-2 scores (which would require administration of the Biographical Questionnaire) be used in screening candidates for DI duty.

2. It is also recommended that a current distribution of COMP-1 and Biographical Questionnaire scores be obtained, cutting scores be established, and the validity of the implemented selection procedures be monitored.

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Problem and Background

The Marine Corps drill instructor (DI) plays an important and very demanding role in the training of Marine recruits. Many Marines, even those with excellent military records, are unable to fulfill the training and/or job requirements of DI duty. The attrition rates at DI Schools ranged from 24 to 56 percent during the period from July 1972 to December 1975; further, 109 DIs (of approximately 1200) were relieved for cause or the good of the service between July 1974 and February 1975 (HQMC, 1975a).

Selection criteria for assignment to DI School have been largely dependent upon subjective evaluations of professional ability, personal traits, and personal history information (HQMC, 1975b, 1978). To increase the objectivity of these evaluations and to lower attrition rates, the Commandant of the Marine Corps requested the development and validation of DI selection instruments (HQMC, 1975a).

Beginning in February 1977, students entering DI Schools at San Diego and Parris Island were administered an experimental test battery. Early results, based upon a limited sample, were promising in terms of predicting school success from both test and background data (Standlee, Abrahams, & Rosen, 1978). The present report is based upon a larger sample and includes both school and on-the-job performance criteria of success.

Purpose

The purpose of the present study was to extend earlier work conducted by Standlee et al. in developing and validating selection procedures that would assist in more accurately predicting the success of prospective DIs.

APPROACH

Sample

The school performance research sample consisted of 759 students (727 males and 32 females) enrolled in 10 classes at DI Schools, San Diego and Parris Island. The job performance research sample consisted of 611 students (594 males and 17 females) in the school performance sample who graduated from DI School.

Selection Instruments

Interviews with DIs and their immediate superiors, in addition to a review of Marine Corps documentary data, indicated that certain noncognitive characteristics (e.g., motivation, interests, stability, leadership) had a high likelihood of differentiating more and less effective drill instructors. Accordingly, three instruments were chosen for inclusion in the experimental test battery--the Strong-Campbell Interest Inventory (Campbell, 1974), the Leadership Opinion Questionnaire (Fleishman, 1969), and a locally developed Biographical Questionnaire. These instruments are described below.

1. The Strong-Campbell Interest Inventory is a 325-item inventory of (a) a respondent's preference for a variety of occupations, school subjects, activities, amusements, and types of people and (b) his personal characteristics. An earlier version of the inventory, the Strong Vocational Interest Blank, was found to be effective in predicting the success of Navy recruit company commanders, whose job requirements are similar to

those of the Marine Corps DIs (Manese, Skrobiszewki, & Abrahams, 1976; Skrobiszewski, 1976).

2. The Leadership Opinion Questionnaire is a 40-item measure of two dimensions of supervisory leadership--consideration and structure. The consideration scale reflects the extent to which a respondent believes that, as a supervisor, his relationships with subordinates should be characterized by mutual trust, respect, consideration, and "warmth of feelings." The structure scale reflects the extent to which he believes that, as a supervisor, he should actively plan, communicate information, schedule, criticize, and try out new ideas in directing group activities toward goal attainment.

3. The Biographical Questionnaire is a 100-item inventory of a respondent's family background, social and educational achievements, personal habits and interests, and past experience in the Marine Corps. It was developed by NAVPERSRANDCEN, with many items being adaptations of those in the Catalogue of Life History Items (Glennon, Albright, & Owens, 1966).

The selection instruments were administered to groups of students at the DI Schools during the first week of class. At San Diego, the instruments were administered by NAVPERSRANDCEN personnel; and at Parris Island, by school personnel. At both locations, the selection instruments were completed in the following order: Leadership Opinion Questionnaire, Biographical Questionnaire, and Strong-Campbell Interest Inventory.

Criterion Measures

The criteria of DI success were performance (1) during DI School and (2) after 6 to 9 months of duty as a DI. Measures of these criteria are described below.

School Performance

During the data gathering phase of the research project (1977), the two DI Schools were standardizing their curricula to include the following subjects:

1. Close Order Drill
2. Training, Organization, and Management
3. Basic Military Subjects
4. Leadership
5. Technique of Military Instruction
6. Individual Combat Training
7. Weapons Mechanical Training
8. Marksmanship Training
9. Physical Training
10. Information Program

To ensure that performance data provided by the two schools were comparable, a student's average grade across all instructional subjects was converted into a standard score with a mean of 50 and a standard deviation of 10. Students dropped because of poor school performance (e.g., poor motivation, academic failure) were assigned a score at the appropriate point in the lower end of the normalized criterion distribution (Abrahams & Alf, 1978); those dropped or recycled because of other reasons (e.g., medical problems, personal hardship) were excluded. Recycled students who eventually graduated were also excluded since their grades, when reported, were based upon additional instruction and testing, and, therefore, not comparable to the grades of students graduating with their class.

Job Performance

Series Commanders (officers responsible for four platoons) were asked to complete (for research purposes only) Drill Instructor Evaluation Sheets for all research subjects under their command, and to mail the completed forms directly to NAVPERSRANDCEN. In this form, DIs are rated on 4-point and 6-point scales covering 29 personality and job performance characteristics (e.g., maturity, reaction to criticism, attitude toward job, counseling ability, leadership). The ratings received were converted into a standard score with a mean of 50 and a standard deviation of 10, using a formula giving equal weight to each characteristic.

Series Commanders were also asked to rank all DIs in their Series, using a NAVPERSRANDCEN constructed form, the Alternation Ranking of Series Drill Instructors. In this form, DIs in a Series are ranked from highest to lowest in terms of their overall effectiveness as a DI. The overall effectiveness is determined by considering such factors as the amount of effort a DI puts into his job, the extent to which he performs his duties in established procedures, his ability to organize work assignments, and the extent to which he transmits the values and mission of the Marine Corps.

The typical Series included about 16 DIs, two to five of whom were research subjects in the present study. The rankings of all DIs in each Series were converted into standard scores with a mean of 50 and a standard deviation of 10, and the rankings of research subjects were recorded for research purposes. Research subjects who were not working as DIs because of performance reasons (e.g., unsatisfactory performance of duty, relieved for good of the service) (3.6%) were assigned rating and ranking scores at the appropriate point in the lower end of the normalized criterion distribution.

When it became evident that the rating and ranking scores were highly related ($r = .729$), it was decided to combine them and use the resulting measure as the criterion of job performance.

Statistical Procedures

The total sample was divided into two subsamples--validation (key construction) ($N = 515$) and cross-validation ($N = 212$)--by assigning men with Social Security Numbers ending in 1, 5, and 9 to the cross-validation subsample. Using the validation subsample, two tentative predictor keys were developed for each of the three experimental selection instruments. The first key was based on the approximately 10 percent of item responses that maximally differentiated between the top 30 percent and the bottom 30 percent (approximate) of subjects in terms of DI school and job performance. In the second key, the difference between high and low performance was increased by including only the approximately best 5 percent of test items in the predictor keys. The best key--considering both validity and reliability (as reflected by number of items)--was used in subsequent data analyses. No keys were developed for women, because of the small sample size ($N = 32$).

Product-moment correlations between predictor key scores and school and job performance scores were computed for the cross-validation subsample. Correlations were also computed to determine the relationship between selected background data and the performance criteria. Multiple correlational analyses were then performed to determine the validity of these predictor variables when used in combination. Finally, success expectancies were computed for selected predictor variables.

RESULTS

Number of Students Graduated, Recycled, and Dropped

Of the 759 students enrolled in 10 classes at Drill Instructor (DI) School, San Diego and Parris Island, 611 (80.5%) graduated, and 148 (19.5%) were dropped--118 (15.5%) for performance reasons (e.g., poor motivation, academic failure), and 30 (4.0%) for other reasons (e.g., medical problems, personal hardship). Included in this total number of students were 58 who had been recycled. Of these students, 46 (79.3%) graduated, and 12 (20.7%) were dropped; 55 (94.8%) had been recycled for performance reasons, and 3 (5.2%) for other reasons. These data are presented in Tables 1 and 2.[1]

As noted earlier, predictor keys were not developed for women because of the sample size. Also, recycled male graduates (N = 43) and those recycled or dropped because of reasons other than performance (N = 30) were excluded in computing school performance scores. Thus, for purpose of school performance score data analyses, the sample size was reduced to 654 male students--464 in the validation sample and 190 in the cross-validation sample.

Return of Job Performance Data

As shown in Table 3, job performance information was received for 475 (77.7%) of the 611 graduates of DI School. Of this number, 44 (9.3%) were not performing as DIs--17 (3.6%) because of performance reasons (e.g., unsatisfactory performance of duty, relieved for good of the service); and 27 (5.7%), because of other reasons (e.g., serious injury, temporarily assigned to other duty).

School Performance

Selection Instrument Relationships

As shown in Tables 4 and 5, the empirically developed predictor keys for the Strong-Campbell Interest Inventory, the Leadership Opinion Questionnaire, and the Biographical Questionnaire, as well as the consideration and structure keys of the Leadership Opinion Questionnaire, were all significantly related to school performance. When these predictors were combined in a multiple regression analysis, however, there was no significant improvement in the predictive effectiveness of the one best selection instrument--the Biographical Questionnaire (r = .377).

Background Information Relationships

The majority of DI students were 21 to 25 years of age, were married, had graduated from high school, had General Classification Test (GCT) scores of 102 or higher, had volunteered for assignment to DI School, were Sergeants, had had less than 7 years of military service, and came from four occupational fields (Infantry, Personnel and Administration, Supply Administration and Operations, and Operational Communications). Data concerning background information and school performance relationships are presented in Tables 6 and 7. As shown, a significantly higher proportion of students who had more education, higher GCT scores, volunteer status, or fewer years of military

[1]Because of the large number of tables in this section relative to the amount of text, tables appear at the end of the section.

service received above average school grades.[2] A significantly high proportion of students from Infantry were above average in school performance, and a significantly high proportion of those from Supply Administration and Operations were below average. Overall, however, the differences in performance of students from the various occupational fields were of little practical significance. Age was not significantly related to school performance. It is interesting to note, however, that 47 of the students were younger than the required minimum of 21 years of age (HQMC, 1975b & 1978), and they had a high degree of success in DI School.

Composite Predictor Score Relationships

To determine whether a composite of test score and other variables might improve the effectiveness of predicting DI School performance, a multiple regression analysis was accomplished for eight variables--Biographical Questionnaire, Strong-Campbell Interest Inventory, Leadership Opinion Questionnaire Consideration, Leadership Opinion Questionnaire Structure, GCT, education, volunteer status, and an index designed to measure speed of promotion based on years of military service and rank. The best four predictors were: Biographical Questionnaire, GCT, education, and volunteer status.

A multiple regression analysis was then accomplished to obtain a regression weighted composite (COMP-1) of volunteer status, GCT, and education. These variables are readily available from the service jacket and would require no additional testing. Next, to determine what might be gained by adding a selection test, a third multiple regression analysis was performed to obtain a regression weighted composite (COMP-2) of the COMP-1 and the Biographical Questionnaire scores. Both multiple correlations were statistically significant and are presented in Table 8.

As shown in Table 9, students with high COMP-1 scores or with high Biographical Questionnaire scores were above average in both DI School grades and rate of graduation. Moreover, the composite of COMP-1 and Biographical Questionnaire scores (COMP-2) increased the spread in the probabilities of their performing above average in and graduating from DI School.

COMP-1 and COMP-2 scores can be obtained without computation from Tables 10 and 11 respectively. The COMP scores in these tables are predicted standard score grades in DI School.

Race Related to Selection Score and School Performance

The composite selection score derived from volunteer status, GCT, education, and Biographical Questionnaire information (COMP-2) and the pass-fail criterion of school performance were tested for racial bias. There was a statistically significant difference in the COMP-2 scores of caucasians and blacks, with a higher proportion of blacks receiving low COMP-2 scores. Against the pass-fail criterion, however, there was no significant difference in the validity of COMP-2 for caucasians and blacks. These data are presented in Table 12.

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[2]Above average is defined as having received a performance criterion standard score of 50 or higher.

Job Performance

Selection Instrument Relationships

Only the Biographical Questionnaire predictor key showed a statistically significant relationship with on-the-job performance of DIs ($r = .156$). The relationship was not strong enough, however, to merit consideration as a practical predictor of job performance. The data are presented in Tables 5 and 13.

The job performance evaluations were highly skewed. On a 4-point scale, for example, 89 percent of the obtained job performance ratings were 3.0 higher. With more spread in criterion scores, there would have been a higher probability of obtaining significant job performance prediction.

Background Information Relationships

A significantly higher proportion of older experimental subjects, those with higher rank, and those with longer service received above average job performance evaluations. These three variables tend to be correlated, and they could have a seniority halo effect on job performance evaluations. A significantly high proportion of subjects from Personnel and Administration were above average in job performance, and a significantly high proportion of those from "other" MOSs were below average. Overall, however, the differences in performance of experimental subjects from the various occupational fields were of little practical significance. The data are presented in Tables 14 and 15.

Composite Predictor Score Relationships

For job performance, the attempt to increase predictive effectiveness by including the Biographical Questionnaire and other potential predictor scores in a multiple regression analysis was unsuccessful.

School Performance Relationship

School performance was related to job performance at a reasonably high and statistically significant level of confidence. The uncorrected correlation was .265; when corrected for the elimination of failing students, it increased to .325.[3] As shown in Table 16. students with high school performance scores were above average in job performance evaluation. This indicates that selection for school performance is also, to some extent, selection for job performance.

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[3] At the time the present data were obtained, a drill instructor student's class standing was recorded in his service jacket. If job performance evaluations were confounded with knowledge of school performance, these correlations may be spuriously high.

Table 1

Number of Sampled Students Who Were Graduated, Recycled, and Dropped

	Drill Instructor School			
	San Diego	Parris Island		
Status	Men	Men	Women	Total
Graduated:				
With Class	308	243	14	565
After Recycle	22	21	3	46
Total	330	264	17	611
Dropped:				
From Class	50	74	12	136
After Recycle	3	6	3	12
Total	53	80	15	148
Total	383	344	32	759

Table 2

Reason Students Were Recycled and Dropped

	Drill Instructor School			
	San Diego	Parris Island		
Status	Men	Men	Women	Total
Recycled:				
Performance Reasons	22	27	6	55
Other Reasons	3			3
Total	25	27	6	58
Dropped:				
Performance Reasons	41	65	12	118
Other Reasons	12	15	3	30
Total	53	80	15	148
Total	78	107	21	206

Table 3

Job Performance Data Return

Item	Marine Corps Recruit Depot			
	San Diego	Parris Island		
	Men	Men	Women	Total
Rating and/or Ranking	235	179	17	431
Not Working as DI	20	24		44
Performance Reasons	(13)	(4)		
Other Reasons	(7)	(20)		
Total				475
No Information	75	61		136
Total	330	264	17	611

Table 4

Key-Construction and Cross-Validation Statistics for Drill Instructor School Performance Success Keys

Sample	Criterion Group	Predictor Score N	Mean	SD	Validity[a]
Strong-Campbell Interest Inventory					
Key-Construction (50-item)	High	127	116.4	7.9	
	Low	137	105.8	11.4	
Cross-Validation	High	54	114.5	7.2	.282**
	Low	55	108.7	11.1	
Leadership Opinion Questionnaire					
Key-Construction (20-item)	High	127	107.5	3.4	
	Low	137	104.3	3.5	
Cross-Validation	High	54	106.5	3.9	.132*
	Low	55	105.2	3.8	
Biographical Questionnaire					
Key-Construction (45-item)	High	127	110.8	4.7	
	Low	137	102.6	5.6	
Cross-Validation	High	54	109.8	5.3	.377**
	Low	55	104.6	5.7	

[a]Product-moment correlations based upon the full range of criterion scores for the cross-validation sample (N = 188).

*p < .05 (one-tail test).
**p < .01 (one-tail test).

Table 5

Correlations Between Leadership Opinion Questionnaire (LOQ) Scores and Criteria of Drill Instructor Performance

Criterion	N	LOQ Score Consideration	Structure
School Performance	647	.150**	.183**
Job Performance	385	.053	.046

Note. Product-moment correlation between consideration and structure scores = .03, p > .05.

**p < .01 (product-moment correlations).

Table 6

Relationship Between Personal Characteristics and Performance in Drill Instructor School

Item	School Performance Criterion	
	N	Percent Above Average
Age[a]		
31 or older	32	34.4
26-30	212	47.6
21-25	361	53.7
20 or younger	47	59.6
Total	652	
Marital Status[b]		
Single	182	56.0
Married, no children	118	51.7
Married, one or more children	301	48.2
Widowed, separated, or divorced	48	52.1
Total	649	
Education[c]		
Above High School Graduate	154	58.4
High School Graduate	370	52.7
Below High School Graduate	124	37.9
Total	648	
General Classification Test Score[d]		
119-144	148	62.8
111-118	150	62.0
102-110	164	48.8
52-101	161	38.5
Total	623	
Volunteer Status[e]		
Volunteer	353	62.0
Nonvolunteer	298	38.6
Total	651	

[a]Chi-square = 6.95, 3 df, $p > .05$.

[b]Chi-square = 2.81, 3 df, $p > .05$.

[c]Chi-square = 12.30, 2 df, $p < .01$.

[d]Chi-square = 25.34, 3 df, $p < .01$.

[e]Chi-square = 35.58, 1 df, $p < .01$.

Table 7

Relationship Between Military Career Aspects and Performance in Drill Instructor School

Item	School Performance Criterion	
	N	Percent Above Average
Rank[a]		
Gunnery Sergeant	8	75.0
Staff Sergeant	190	56.3
Sergeant	369	49.1
Corporal	85	47.1
Total	652	
Length of Service (years)[b]		
13 or more	9	22.2
10-12	41	46.3
7-9	153	56.9
4-6	280	42.9
1-3	169	62.7
Total	652	
Occupational Field[c]		
Personnel & Administration (01)	91	53.8
Intelligence (02)	14	42.9
Infantry (03)	131	60.3
Engineer Construction, Equipment & Shore Party (13)	35	51.4
Operational Communications (25)	47	55.3
Supply Administration & Operations (30)	65	33.8
Motor Transport (35)	26	34.6
Military Police & Corrections (58)	28	53.6
Aircraft Maintenance (60/61)	43	44.2
Avionics (66)	27	59.3
Other MOSs[d]	142	51.4
Total	649	

[a]Chi-square = 3.98, 2 df (rows 1 and 2 combined), $p > .05$.

[b]Chi-square = 22.08, 4 df, $p < .01$.

[c]Chi-squares for each occupational field ranged from 7.86 to .00, 1 df; 03 $p < .05$, 30 $p < .01$.

[d]MOSs are: 04, 08, 11, 14, 18, 21, 23, 26, 28, 31, 32, 33, 34, 40, 41, 44, 46, 49, 55, 57, 59, 65, 68, 70, 72, and 73.

Table 8

Simple and Multiple Correlations Between Selected Predictor Variables and Performance in Drill Instructor School

Predictor Variables	N	r	R[a]
Service Jacket Data (COMP-1)			
Volunteer Status	443[b]	.322	
GCT	443	.208	.387
Education	443	.154	.392
Service Jacket plus Test Data (COMP-2)			
Biographical Q	180[c]	.366	
COMP-1	180	.330	.429

[a]Overall F test $p < .01$ for both COMP-1 and COMP-2 variables.

[b]Validation sample.

[c]Cross-validation sample; with a larger N of 188, Table 4, $r = .377$.

Table 9

Relationship Between Selected and Composite Predictor Variables and Performance in Drill Instructor School

Predictor Score Category	School Performance Criterion			
	N		Percent	
			Above Average	Graduated
Volunteer Status, GCT, and Education Composite Score (COMP-1)[a]				
53-58	48[b]	50[c]	72.9	96.0
50-52	47	49	59.6	93.9
47-49	47	47	42.6	85.1
40-46	38	40	31.6	65.0
Total	180	186		
Biographical Questionnaire Score[d]				
112-121	48		72.9	97.9
108-111	42		57.1	92.9
103-107	50		44.0	82.0
93-102	48		33.3	66.7
Total	188			
COMP-1 and Biographical Questionnaire Composite Score (COMP-2)[e]				
53-60	43		79.1	100.0
51-52	41		56.1	95.1
47-50	47		51.1	85.1
41-46	49		28.6	65.3
Total	180			

Note. Data based upon cross-validation sample.

[a]Chi-square for above average = 17.63, 3 df, $p < .01$; Chi-square for graduated = 21.19, 2 df (rows 1 and 2 combined), $p < .01$.

[b]N for "above average" performance criterion.

[c]N for "graduated" performance criterion.

[d]Chi-square for above average = 16.80, 3 df, $p < .01$; Chi-square for graduated = 20.41, 2 df (rows 1 and 2 combined), $p < .01$.

[e]Chi-square for above average = 23.77, 3 df, $p < .01$; Chi-square for graduated = 26.00, 2 df (rows 1 and 2 combined), $p < .01$.

Table 10

Conversion of GCT, Volunteer Status, and Education Information Into a COMP-1 Score[a]

GCT Score	Nonvolunteer		Volunteer	
	Non HS Grad	HS Grad	Non HS Grad	HS Grad
140-149	51	53	57	59
130-139	50	51	56	57
120-129	48	50	54	56
110-119	47	48	53	54
100-109	45	47	51	53
90-99	44	45	50	51
80-89	42	44	48	50
70-79	41	42	47	48
60-69	39	41	45	47
50-59	38	39	44	45

[a]Predicted school grade, with a mean of 50 and a standard deviation of 10.

Table 11

Conversion of Biographical Questionnaire and COMP-1 Scores Into a COMP-2 Score[a]

BIO Q Score	COMP-1 Score							
	36-38	39-41	42-44	45-47	48-50	51-53	54-56	57-59
119-121	48	50	52	53	55	57	59	61
116-118	47	48	50	52	54	56	57	59
113-115	45	47	49	51	52	54	56	58
110-112	44	46	47	49	51	53	55	56
107-109	42	44	46	48	50	51	53	55
104-106	41	43	45	46	48	50	52	54
101-103	40	41	43	45	47	49	50	52
98-100	38	40	42	44	46	47	49	51
95-97	37	39	41	42	44	46	48	50
92-94	36	37	39	41	43	45	46	48

[a]Predicted school grade, with a mean of 50 and a standard deviation of 10.

Table 12

Relationship Between COMP-2 (Composite of Volunteer Status, GCT, Education, and Biographical Questionnaire), Race, and School Attrition

Item	N		
	Caucasian	Black	Total
Distribution of COMP-2 Scores[a]			
53-60	37	6	43
51-52	37	4	41
47-50	35	12	47
41-46	34	15	49
Total	143	37	180
Attrition Without COMP-2 Cut Score[b]			
Pass	124	30	154
Fail	19	7	26
Total	143	37	180
Attrition With COMP-2 Cut Score of 47[c]			
Pass	102	20	122
Fail	7	2	9
Total	109	22	131

Note. Data based on cross-validation sample.

[a]Chi-square = 4.12, 1 df (rows 1, 2, and 3 combined, since selection procedures are concerned primarily with eliminating low performers), $p < .05$.

[b]Chi-square = .80, 1 df, $p > .05$.

[c]Chi-square = .71, 1 df, $p > .05$.

Table 13

Key-Construction and Cross-Validation Statistics for Drill Instructor Job Performance Success Keys

Sample	Criterion Group	Predictor Score N	Predictor Score Mean	Predictor Score SD	Validity[a]
Strong-Campbell Interest Inventory					
Key-Construction (50-item)	High	71	115.2	8.3	
	Low	76	105.3	8.6	
Cross-Validation	High	33	110.6	7.3	-.003
	Low	27	110.6	9.3	
Leadership Opinion Questionnaire					
Key-Construction (20-item)	High	71	101.6	2.6	
	Low	76	98.8	3.0	
Cross-Validation	High	33	100.1	2.2	.094
	Low	27	100.4	2.6	
Biographical Questionnaire					
Key-Construction (25-item)	High	71	105.1	3.2	
	Low	76	99.9	2.9	
Cross-Validation	High	33	103.1	2.9	.156*
	Low	27	101.8	2.4	

[a]Product-moment correlations based upon the full range of criterion scores for the cross-validation sample (N = 114).

*$p < .05$ (one-tail test).

Table 14

Relationship Between Personal Characteristics and Job Performance of Drill Instructors

Item	Job Performance Criterion	
	N	Percent Above Average
Age[a]		
31 or older	30	75.0
26-30	114	62.3
21-25	221	46.2
20 or younger	32	31.3
Total	387	
Marital Status[b]		
Single	107	48.6
Married, no children	68	57.4
Married, one or more children	177	52.5
Widowed, separated, or divorced	33	36.4
Total	385	
Education[c]		
Above High School Graduate	92	59.8
High School Graduate	232	48.3
Below High School Graduate	61	49.2
Total	385	
General Classification Test Score[d]		
119-144	83	57.8
111-118	91	51.6
102-110	96	46.9
52-101	101	47.5
Total	371	
Volunteer Status[e]		
Volunteer	231	49.8
Nonvolunteer	156	53.2
Total	387	

[a]Chi-square = 17.64, 3 df, $p < .01$.

[b]Chi-square = 4.35, 3 df, $p > .05$.

[c]Chi-square = 3.60, 2 df, $p > .05$.

[d]Chi-square = 2.67, 3 df, $p > .05$.

[e]Chi-square = .44, 1 df, $p > .05$.

Table 15

Relationship Between Military Career Aspects and Job Performance of Drill Instructors

Item	Job Performance Average	
	N	Percent Above Average
Rank[a]		
Gunnery Sergeant	7	85.7
Staff Sergeant	102	64.7
Sergeant	230	45.7
Corporal	48	43.8
Total	387	
Length of Service (years)[b]		
13 or more	3	66.7
10-12	20	75.0
7-9	88	64.8
4-6	166	43.4
1-3	110	47.3
Total	387	
Occupational Field[c]		
Personnel & Administration (01)	53	66.0
Intelligence (02)	8	75.0
Infantry (03)	78	59.0
Engineer Construction, Equipment & Shore Party (13)	26	65.4
Operational Communications (25)	28	39.3
Supply Administration & Operations (30)	39	35.9
Motor Transport (35)	19	57.9
Military Police & Corrections (58)	18	50.0
Aircraft Maintenance (60/61)	24	50.0
Avionics (66)	15	53.3
Other MOSs[d]	86	40.7
Total	386	

[a]Chi-square = 13.52, 2 df (rows 1 and 2 combined), $p < .01$.

[b]Chi-square = 15.93, 3 df (rows 1 and 2 combined), $p < .01$.

[c]Chi-square for each occupational field ranged from 4.60 to .00, 1 df; 01 and other MOSs $p < .05$.

[d]MOSs are: 04, 08, 11, 18, 21, 23, 26, 28, 31, 32, 33, 34, 40, 41, 44, 46, 49, 55, 57, 59, 65, 68, 70, 72, and 73.

Table 16

Relationship Between School and Job Performance of Drill Instructors

School Performance Score	N	Job Performance Criterion Percent Above Average[a]
60-77	77	64.9
53-59	107	54.2
48-52	90	54.4
38-47	89	33.7
Total	363	

[a]Chi-square = 17.36, 3 df, $p < .01$.

DISCUSSION

The present attrition rate at Drill Instructor (DI) School is lower than it was during fiscal years 1973 to 1976. A possible explanation is that Parris Island is operating under a pilot program of recycling provisionally acceptable drill instructor students for a 30-day period of observation at a Recruit Training Battalion (DI School, 1976). A more likely explanation for the lower attrition rate is the increased emphasis placed upon complying with the criteria for selecting and assigning Marines to DI duty (HQMC, 1976). With a lower attrition rate, the need for predictor instruments becomes less critical. This does not mean, however, that attrition cannot be further reduced or that DI performance cannot be improved.

The present research supports three measures for selecting candidates for assignment to DI School: (1) COMP-1, which requires only a simple conversion based upon readily available information--volunteer status, GCT score, and level of education, (2) Biographical Questionnaire, which requires no more than about 30 minutes of testing time, and (3) COMP-2, which is a simple combination of the first two measures and yields even greater accuracy in predicting performance in DI School.

The recently revised DI selection requirements now include, but do not optimally or systematically combine, two of the COMP-1 variables, GCT score and level of education, and suggest but do not require the third, "volunteer preferred" (HQMC, 1978). Thus, incorporation of this selection measure would require very little change in existing Marine Corps selection procedures.

It should be noted that the General Classification Test is no longer administered to enlisted personnel. Procedures for converting the old Aptitude-Area Classification Test (A-A) or the new Armed Services Vocational Aptitude Battery (ASVAB) scores into GCT scores are provided in the Assignments, Classification, and Travel Systems Manual (HQMC, 1978).

CONCLUSIONS

1. The Biographical Questionnaire score is an effective predictor of DI School performance.

2. A composite score of volunteer status, GCT score, and level of education (COMP-1) is also an effective predictor of DI School performance.

3. A composite of these two predictors, COMP-1 and Biographical Questionnaire score (COMP-2), yields even greater accuracy in predicting DI School performance.

4. DI School performance is the best single predictor of performance on the job.

RECOMMENDATIONS

1. It is recommended that COMP-1 and COMP-2 scores (which would require administration of the Biographical Questionnaire) be used in the screening of candidates for DI duty.

2. It is also recommended that a current distribution of COMP-1 and Biographical Questionnaire scores be obtained, cutting scores be established, and the validity of the implemented selection procedures be monitored.

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